in which H = the middle ordinate of the parabola, in this case
1 m 200 or 4.00 ft;
*; = the resultant velocity of the two jets uniting to form
the flame;
sin 5 = the sine of the resultant angle of the two jets;
2g = gravitational constant = 2X9.81 = 19.62 in metric
units or 2X32.2 = 64.4 in English units;
ti = the temperature of the gases within the chamber;
Z_m = the temperature of the gases in the jet of flame.

When a furnace is heating up, the stream of flame tends to follow the roof, until the interior of the chamber becomes raised to a temperature sufficient to permit it to drop, and the drop of the flame is an index of the progress made in heating the furnace. It is likewise desirable to be able to sinter the bottom, when the furnace, for any reason, is cooler than usual, or the ports are eroded. The temperature of the jet of flame, t_m, may be assumed as 1800° C. (3272° F.) and that of the gases in the chamber as 800° C. (1472° F.)=fc; velocities of 0=15 m 00, 20 m 00 and 25 m 00 (49.2, 65.6 and 82.0 ft) per second will be tried out in the formula, solving for sin 5. The resultant angle for these velocities will be as follows:

For v = 15 m 00 (49.2 ft) per second,
5 = 18° 12'
2; = 20 m 00 (65.6 ft) per second, 5
= 13° 33'
y = 25 m 00 (82.0 ft) per second, 5
= 10° 46'

In solving to obtain these angles

fc = 800° C. (1472° F.) 273+*, = 273+800 = 1073
2_m-Z<= 1800-800 = 1000
#=lm200 (4.00ft) 20 = 2X9.81 = 19.62

The formula may now be written:

«? sin* SX1078
^{n}-*-•*> 19.62X1000 '

which becomes

. $_s$ ____/2T794 4.684

$$\sin 5 = {}_{A}/\text{—}\sim\text{—} = \text{---}.$$
$$\backslash \quad v^2 \quad v$$

For *v=15* m 00 (49.2 ft) per second, sin 5 = 0.3123

v = 20 m 00 (65.6 ft) per second, sin 5 = 0.2342

v = 25 m 00 (82.0 ft) per second, sin 5 = 0.1873